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(54) Title: UNIVERSAL COMMUNICATIONS SYSTEM

(57) Abstract: A communications system and method for receiving an input message in an input medium and delivering an output message in an output medium. The system and method provide a plurality of conversion and delivery options and selection of conversion and delivery options is based upon input from a user.

UNIVERSAL COMMUNICATIONS SYSTEM

Field of the Invention

This invention relates to the field of automated electronic communication systems.

Background of the Invention

In an increasingly global market place, managing communications between people and businesses in different regions or countries can be challenging. In addition to the barriers created by time zones and language, the use of disparate electronic formats can further impair efficient communications. It is somewhat ironic that, in an age cellular phones, alphanumeric pagers, electronic mail, and hand-held internet devices, where convenience is king, the proliferation of communication methods may in some ways be stifling the ability to communicate efficiently.

Long distance business communications may be most severely impacted by these inefficiencies. Disruptions in communication delivery of a few hours or even minutes can mean the difference between a successful deal and a lost opportunity. Early in a business relationship, such as when one party is initially seeking products or services, when conducting a complex deal among a plurality of parties, or during a deal between unfamiliar parties, disruptions in communication can be devastating.

An example of a long distance transaction using present systems might be: Company Alpha in Germany needs to contact Supplier Beta in Maryland. Supplier Beta has contact people Dennis and Ellen. Dennis and Ellen each have company electronic mail accounts and company phone numbers with answering services. Dennis also has a home office with a facsimile machine. Ellen carries a pager. Imagine that the representative of Company Alpha, is currently in an airport, has no communication devices of her own, has to board an international flight in the next ten minutes, and does not know the present whereabouts of Dennis or Ellen. Determining a way to quickly attempt a direct voice connection and/or leave a message in the location most likely to be checked in the near future, may be difficult. Formatting and reformatting a message to be received by all of the potential recipient devices may be impossible. Receiving any sort of response in a timely manner, particularly without

knowing what format it may be sent in, may present additional challenges. As a further complication, imagine that the representative of Company Alpha only speaks German, and Dennis and Ellen do not.

These and other drawbacks of prior art systems are overcome by the various embodiments of the invention.

Summary of the Invention

It is an object of the invention to overcome those drawbacks described above as well as others.

It is an object of the invention to provide a system and method for delivery of communications over a network using a plurality of input and output formats.

These and other objects of the preferred embodiments may be achieved by a communications system for transmitting a message across a network from an input device to an output device. An input message has an input medium and an output message has an output medium, and those mediums may not be the same. The communications system includes a gateway system for receiving the input message and delivering the output message. The gateway system includes a message processing module for determining a destination address, the output medium, and the output protocol, a conversion module for converting the input medium to the output medium using one or more of a plurality of medium-specific conversion sub-modules, and a delivery module for initiating delivery of the output message to the destination address according to the output protocol.

These and other objects of the preferred embodiments may also be achieved by a method of transmitting a message across a network from an input device to an output device. The method includes the steps of: receiving an input message in an input medium from a user; determining an output protocol; determining a destination address; determining an output medium; creating an output message in the output medium by converting the input message from the input medium to the output medium; and initiating delivery of the output message to the destination address according to the output protocol.

The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate an embodiment of the invention and, together with the description, serve to explain the principles of the invention.

Brief Description of the Drawings

Figure 1 is a schematic view of a messaging system according to an embodiment of the invention.

Figure 2 is a flow chart of the steps in a message handling method according to an embodiment of the invention.

Figure 3 is a flow chart detailing one aspect of one embodiment of the method of Figure 2.

Figure 4 is a flow chart detailing one aspect of one embodiment of the method of Figure 2.

Figure 5 is a flow chart detailing one aspect of one embodiment of the method of Figure 2.

Figure 6 is a flow chart detailing one aspect of one embodiment of the method of Figure 2.

Figure 7 is a schematic view of a system for integrated business services incorporating one embodiment of the invention.

Figure 8 is a flow chart of the steps in a method for integrated business services incorporating one embodiment of the invention.

Detailed Description of the Preferred Embodiments

Reference will now be made in detail to the present preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings in which like reference numerals refer to corresponding elements.

With reference to the drawing figures generally, and particularly to Figure 1, a communication system 100 is shown for providing a universal messaging network. Communication system 100 includes a Gateway System 110 for receiving an input message and generating an output message. The input message is received by Gateway System 110 in a particular input medium, for example, the message may be received as a text-based electronic mail message sent from a conventional Internet

mail program or a spoken message sent from a traditional telephone. The output message may be sent from Gateway System 110 in a different output medium. Medium may refer to the use of text, audio, video, and graphics to communicate a message. Medium may also refer to spoken or written language (such as English, German, Japanese, etc.), formatting for a particular input/output device, or use of a particular appliance instruction set. Other input/output mediums may include facsimile transmission of text and figures, video or graphics from a digital video or still camera, text, audio, or video submission through a web site, file transfer from any electronic system, control signaling or messaging from any appliance, alphanumeric data to or from a conventional or wireless telephone or pager, etc. Any form of electronic communication may be viewed as a possible input/output medium.

The input message may be received from a Network 170, which is accessed by a user who sends the input message. The output message may be sent to a Network 180, which incorporates a destination to receive the output message. Network 170 and Network 180 may be the same network or may be two different networks. Network 170 and Network 180 may be a wide area network, a local area network, or a global network, such as the Internet. Network 170 and Network 180 may include any number of communication systems and networks, such as telex, CDMA, GPS, cellular, radio and satellite networks and systems. Network 170 and Network 180 may incorporate or interconnect a plurality of other systems or networks, such as Gateway System 110. Message processing may be asynchronous or may be calculated to establish a real-time direct link between Network 170 and Network 180.

Network 170 may include a User System 171, a Public System 172, and a Communication Device 173. User System 171 may be comprised of a personal computing device or network of devices, such as a personal computer, facsimile machine, personal digital assistant, other personal networkable appliances, or a home network. User System 171 may also be comprised of a business computing device or network of devices, such as a business intranet, server, workstation, facsimile machine, or networkable business/industrial appliance. Public System 172 may include any publicly-available computing device or network of devices, such as personal computers and workstations available in public clusters, specially designed kiosks disposed in airports and shopping malls, enhanced public telephones, and other

devices. Communication Device 173 may be any private or public personal communication device, such as a telephone, cellular telephone, pager, web-enabled telephone, video-phone, one-way or two-way radio, or other communication device capable of receiving input.

Network 180 may include a Destination System 181, a Public System 182, and a Communication Device 183. Destination System 181 may be substantially similar to User System 171, described above. Public System 182 may be substantially the same as described above for Public System 172. Communication Device 183 may be substantially as described above for Communication Device 173 and include any communication device for providing output.

The systems of the invention, specifically Gateway System 110, include a plurality of modules for completing certain tasks. The modules are comprised of a combination of software and hardware necessary to perform a task or set of tasks. In each module's simplest embodiment, a data processor, memory, and an instruction set (i.e. computer code) may be all that are used to carry out the given tasks. More commonly, however, a plurality of input and output devices, short term and long term memory systems, layers of computer code (i.e. operating system, application software, etc.), communication devices, and multiple processors may be used. Further, a plurality of modules may share the same hardware and portions of a software library. In some cases, a module may contain one or more other modules. It will be understood to those of ordinary skill in the art, that the modules described herein may be embodied in a large number of equivalent combinations of code objects and hardware. The units represented by the modules described are conceptual and should not be construed as a limiting structure for the hardware and software combinations capable of executing the modules' tasks.

Gateway System 110 includes a Message Processing Module 112, a Conversion Module 113, a Delivery Module 114, and, in some embodiments, an Encryption Module 115 and a User Interface Module 116. Message Processing Module 112 receives the input message and determines at least one destination address, at least one output medium, and message handling requirements and preferences for delivery of the message. Conversion Module 113 makes one or more medium conversions between the input message and the output message. Delivery

Module 114 oversees, tracks, and verifies delivery of the output message. Encryption Module 115 optionally allows an output message to be sent in an encrypted format. User Interface Module 116 optionally allows a user to interface with Gateway System 110 for message and message handling input.

Message Processing Module 112 determines the protocol to be followed in handling, converting, delivering, and tracking a message. When an input message is received, Message Processing Module 112 identifies user instructions on how to process the message. Message Processing Module 112 determines one or more of each of the following: Destination Address Settings 121, Output Medium Settings 122, and Message Processing Protocol 123. Destination Address Settings 121 describe the electronic addresses to which the message may be sent. The options for Destination Address Settings 121 are largely determined by the types of receiving devices available to the intended recipient of the message. Output Medium Settings 122 describe the available mediums for the output message, such as text or speech, graphic or video, language used i.e., English or German, facsimile or electronic mail, etc. Destination Address Settings 121 and Output Medium Settings 122 may be arranged in a hierarchical order for the purpose of sequentially attempting or making multiple delivery attempts to multiple addresses or output devices. Message Processing Protocol 123 provides the additional instructions to Conversion Module 113, Delivery Module 114, and Encryption Module 115 to oversee delivery and monitoring of the output message. Message Processing Protocol 123 may make reference to the Settings 121 and/or 122.

A Delivery Preferences Module 124 may be used to store a plurality of User Settings 125. The User Settings 125 may be organized as an address book of potential message recipients or contacts periodically corresponded with by the user. The User Settings 125 for each recipient may include names, contact information, and other data relevant to the user's contact with the recipient. The User Settings 125 may also include destination address information, technology settings, language settings, and conversion settings. Destination address information may include one or more destination addresses, such as electronic mail and regular mail addresses, telephone, mobile telephone, pager, and facsimile numbers, or the network addresses of one or more networked appliances. Destination address information may include all known

destination addresses for a particular contact and may provide a basis for determining Destination Address Settings 121. For each destination address, one or more technology settings may be provided for defining the type of output device available at the destination address. In some cases, more than one type of device may be concurrently or alternately available at a single destination address, such as a home office telephone number which is sometimes attached to a facsimile machine, personal computer, or answering service. One or more language settings or other conversion settings may also be provided for each recipient, address, or type of device. The language settings provide a default preference for language medium conversion so that Gateway System 110 includes conversion to the specified language in Message Processing Protocol 123 for any message to that recipient. Conversion settings may provide default preferences for other medium conversions, such as between speech and text or video and graphics. Conversion settings may include both technical and aesthetic choices about the way in which an input message in an input medium is converted to an output message. For example, a conversion setting might specify that all text be converted to voice using a particular conversion algorithm and that the voice it is converted to be that of a young woman with a French accent. Delivery Preferences Module 124 may hierarchically arrange the user settings for each recipient to provide a sequential framework for attempting message delivery to the recipient. The user may also define delivery preferences for receiving messages from other Gateway System 110 users.

Message Processing Module 112 may use information contained in Delivery Preferences Module 124 to initially define Destination Address Settings 121, Output Medium Settings 122, and Message Processing Protocol 123. Message Processing Module 112 may modify the default settings from Delivery Preferences Module 124 according to information contained in the input message or provided by the user during a transaction inputting the input message into Gateway System 110. Further, Delivery Preferences Module 124 may check to see whether the recipient is also a user of Gateway System 110 with receipt preferences. An algorithm may be defined for rectifying conflicting delivery preferences and defining the final Message Processing Protocol 123 for any given message.

Conversion Module 113 carries out any medium conversions defined by Message Processing Protocol 123 for a particular message. Conversion Module 113 may include any number of conversion sub-modules for specific types of conversions. For example, Conversion Module 113 may include Text/Speech Conversion Module 131, Video/Graphic Conversion Module 132, Language Conversion Module 133, Facsimile Data Conversion Module 134, and Custom Conversion Module 135. As additional mediums are introduced to Communication System 100, additional conversion sub-modules may be added to allow conversion between the mediums. Conversion Module 113 may use one or more base mediums that are used as intermediate or final steps for any conversions. For example, a standard language medium may be defined as English. All messages requiring language conversion may first be converted to English, if they did not start out in English, before being converted to another language, such as German or Japanese. This allows all conversion protocols to be based on English translation, rather than requiring a separate protocol matching each possible input language with each possible output language. Analogous protocols using standardized base intermediaries mediums may be used for other medium conversions, such as conversions between different data formats and conversion to networked appliance instruction languages.

Delivery Module 114 oversees actual delivery attempts of the output message. For some message delivery transactions, all that may be required is that the message is packaged in the appropriate data format and sent to a destination address using the appropriate communication protocol for the network it is being sent on and the system or device it is being sent to. The output message from a simple transaction may be tracked to verify that it was received by the destination system or device. For some message delivery transactions a fairly complex series of sequential or simultaneous delivery attempts may be preferable. Additionally, destination system monitoring, receipt verification, establishment of real-time connections, and other complex delivery protocols may also be preferable. Some delivery protocols may require that the output message be resubmitted to Conversion Module 113 for further conversions to be compatible with additional delivery attempts.

Delivery Module 114 includes Control Definitions 141, Delivery Protocol 142, and Event Tracking Module 143. Control Definitions 141 are concerned with the

subjects and objects that are associated with hardware and software entities within Communications System 100 that can be used or communicated with directly or indirectly. Control Definitions provide the actual data formats and communication protocols for carrying out communication functions across Networks 170 and 180. Delivery Protocol 142 specify the functional steps for handling a message delivery in accordance with Message Handling Protocol 123. Delivery Protocol 142 may include the number of delivery attempts to a particular destination address or device type, the potential responses from the device at the destination address and the course of action to be followed in response to such responses. Delivery Protocol 142 may include triggers for passing the output message back to Conversion Module 113 for further conversion to allow additional delivery attempts. Event Tracking Module 143 provides user level outcome tracking. User level outcome tracking summarizes attempts and results and may provide this information asynchronously or on a real-time basis to a user. Event Tracking Module 143 may allow the user to alter or intervene in an ongoing delivery protocol. Event Tracking Module 143 may also provide user level outcome tracking to other systems in Computer System 100 for value added transactional functions unrelated to pure communication fulfillment (see description below with regard to Figures 7 and 8).

Encryption Module 115 provides secure transmission of data in an encrypted format across Networks 170 and 180. In some embodiments, Encryption Module 115 may be incorporated in Delivery Module 114 or Conversion Module 113. Data encryption or data encryption options may be provided as a standard preference within Delivery Preferences 124. Custom data encryption on a user-by-user or even recipient-by-recipient basis may also be supported. Default or standardized encryption formats supported by a plurality of systems and devices within Communication System 100 may be employed by Encryption Module 115.

User Interface Module 116 provides a message input and monitoring interface for a user. User Interface Module 116 may provide the user with the ability to create an input message, define delivery preferences, define tracking preferences, monitor on-going delivery transactions, access archived input and output messages and transaction histories, change user settings, and perform other functions related to Gateway System 110. The user interface may be a graphical user interface provided

across a network, such as a web site available on the World Wide Web, may be an audio user interface, such as an automated telephone response system, or may be any other form of user interface for receiving input messages and other user inquiries and/or providing a response to user inquiries.

As described above, Communications System 100 and Gateway System 110 allow a user to input a message in a particular medium convenient to the input methods at the user's disposal. The user may define how the message should preferably be delivered. Gateway System 110 assesses the known output devices available for the intended recipient or recipients and orchestrates whatever medium conversions are preferable or necessary to achieve delivery of the message.

A method of transmitting a message between disparate input and output devices will now be described with reference to Figures 2-6. One embodiment of this method may employ a communication system such as Communication System 100 described above.

Figure 2 depicts the basic steps of method 200. In step 230, an input message is received in an input medium. In step 240, a message handling protocol is determined. In step 241, a first destination address is determined from the message handling protocol. In step 242, an output medium for the first destination address is determined from the message handling protocol. In step 250, the input message medium is converted to the output medium. In step 260, delivery of an output message in the output medium is initiated. If, based on non-delivery or other delivery parameters specified in the message handling protocol, another delivery attempt is required, the system returns to step 241 to determine whether an alternate destination address is in order and continues processing from there.

In step 230, the input message is received by a gateway system across a network of some sort. For example, the input message may be received directly from a user accessing the gateway system through an interactive process, or the input message may originate elsewhere in the system and be received as a bulk submission, possibly with an appropriate instruction set or header attached. The input message may include text, speech, audio, video, graphics, data files, appliance instructions, queries to establish a direct real-time communication channel, or any other communication. The input message may be in any medium and transferred by any

communication protocol recognized by the gateway system. The gateway system may be readily expandable to include additional mediums and communication protocols, including user-specific custom mediums and protocols.

Figure 3 shows an embodiment of a message receipt method. In step 301, the user is identified by the gateway system. For example, an interactive user may be identified by direct user input, such as logging into the system, or, in a bulk submission, the user may be identified from the input message itself. In step 302, an access type is determined. Access type allows the gateway system to classify the message input medium and may define the protocol which the gateway system uses to receive or handle the message. For example, access type may be determined by direct user selection in an interactive transaction, such as by selecting video input from a list of options provided by the gateway system. The selection of video input would in turn prompt the gateway system to accept video data from an input device at the user's location. In a bulk submission example, a header to the message could contain access flags which alert the system to the type of data contained in a message body or attachments, or the system could use a data recognition protocol to extract the access type from the content of the message file or files. In step 303, one or more recipients for the message are identified. Identification of the message recipients allows the gateway system, at least in part, to determine the destination address, destination medium, and the message handling protocol. For example, if a recipient is not known to the gateway system (i.e. is not a user of the system and does not have a contact entry in the inputting user's address book), the recipient identification in the message may contain only the destination address and the gateway system may use default protocols for message handling. Alternatively, a recipient identifier, like a name, may be input by the user or submitted in the message and the gateway system may use information previously retained (such as in a user entry or address book) to locate additional message handling information about the recipient. Identification of the recipients from the message could be handled similarly to the methods described above for step 302. At the close of a message receipt transaction, either by bulk submission or through an interactive process, the gateway system has substantially the information necessary to process the message handling and delivery of the message.

Submission of message handling preferences may be included in the initial message receipt transaction or may be part of an on-going transaction or later bulk submission.

In step 240, a message handling protocol is determined. The message handling protocol determines the course of the input message through any and all conversions, delivery attempts, and tracking procedures. The message handling protocol may use a combination of default settings, user preferences, and recipient preferences. The message handling protocol may utilize one or more hierarchical lists containing destination addresses, output mediums, control definitions, tracking options, and conditions for classifying an initiated delivery as unsuccessful and proceeding to another delivery attempt. Determination of the message handling protocol may include using a default preferences hierarchy, a user defined preferences hierarchy, and/or a recipient defined preferences hierarchy to determine the actual hierarchy of the message handling protocol for the specific input message. The hierarchy may be dynamically modified by actions of the user or reactions from destination systems during attempted deliveries.

An embodiment of the steps employed in determining the message handling protocol are shown in Figure 4. In step 401, default preferences are determined. The default preferences may be system defined. For example, the default preferences could be determined by the access type determined in step 302 above. Definition of default preferences may include constructing a hierarchical preferences list. In step 402, user defined preferences are determined. For example, the user-defined preferences could be determined based on user settings in a user address book, could be submitted as part of the input message, or could be submitted through an interactive transaction between the gateway system and the user. Determination of user-defined preferences may include altering the hierarchical preferences list constructed in step 401. In step 403, recipient-defined preferences are determined. For example, the recipient may also be a user of the gateway system and may have provided a hierarchical list of preferences to be applied to incoming messages. Determination of recipient-defined preferences may further modify the hierarchical list constructed in step 401. In step 404, the preferences of steps 401, 402, and 403 are integrated into a message handling protocol.

In step 241, a destination address is determined by the message handling protocol. If a plurality of destination addresses are available for the recipient, the hierarchical list in the message handling protocol may determine the destination address to be used. For example, if a recipient has an electronic mail address, a telephone number, and a facsimile number, the message handling protocol might initially select the telephone number according to preferences described above. The preference might be based on the theory that a telephone number is likely to get the most expedient response or because the input message includes a request for a direct connection.

In step 242, an output medium is determined by the message handling protocol. If a plurality of mediums are available for the destination address, the hierarchical list in the message handling protocol may determine the output medium or combination of mediums to be used. For example, an electronic mail account may accept any number of attachments in different mediums. If the input message was an English audio/video submission, the message handling protocol might determine that the output medium should be a German translation text version of the speech component of the audio, a single frame graphic extracted from the video, as well as attachment of the original audio/video file.

In step 250, one or more medium conversions are made to prepare the output medium files necessary for an attempted delivery according to the message handling protocol. Conversions may be made to prepare every medium possibly required in the first and any subsequent delivery attempts in order to improve processing time once a delivery protocol is initiated. The medium converted message files may be stored in the gateway system to be used during the delivery attempt or attempts. In order to make the preferred conversions, the message components and their present mediums are identified, appropriate conversion modules matching present mediums with output or intermediate mediums are selected, and then the message is converted by one or more of the selected modules into the preferred output mediums.

Figure 5 depicts a detailed view of a method of converting the input message medium to the medium or mediums called for in the output message. In step 501, message component mediums are identified. For example, an electronic mail message may include a text body in English, include a direct connection request or other

instruction set in the header, and have attached audio, video, graphic, and data files. The location and medium of each component may be organized for easy retrieval by the message handling protocol. In step 502, an appropriate conversion module is selected based upon the existing medium and the desired output medium. In some cases, one or more intermediate mediums may be selected in the course of converting between mediums. Once a conversion module is selected, the identified component of the message is converted and the converted component is located and identified for use in message delivery of further conversions. Steps 503-508 depict some sample conversions that might be performed. The conversions shown are examples only and do not reflect the wide variety and expandability of conversion options enabled by the system and method of the invention. In step 503, voice data may be converted to text data using voice recognition algorithms. In step 504, text data may be converted to voice data using voice enabling algorithms. Preferences in the message handling protocol may determine the qualities and characteristics of the voice (such as gender, accent, speed, tone, etc.). In step 505, facsimile data may be converted to text and graphics data using a data extraction algorithm. In step 506, video data may be converted to one or more static graphics. One or more frame samples may be taken from the video for generation of static graphics. A plurality of frame samples in relatively close succession may also be used to generate a graphic animation. In step 507, a language conversion may be performed. Any number of language conversion modules, based upon text or speech translation, may be included. Speech may be converted to text, text translated to a different language text, and then text converted to speech. Also, translations may be through a standard language rather than requiring a separate module for each combination of languages. In step 508, existing data may be converted to custom data mediums. For example, a text command may be converted to an appliance instruction set such that a text command to preheat a networked oven could be converted and issued over a network to the home or industrial appliance. Additional custom conversions could be enabled on a user-by-user, technology-by-technology, or recipient-by-recipient basis.

In step 260, one or more delivery attempts is initiated according to the message handling protocol. Each delivery attempt to each destination address may require separate control definitions and event tracking protocols.

Figure 6 depicts a method of initiating one or more delivery attempts. In step 601, delivery control definitions are established. Delivery control definitions include the actual operational, data packaging, and communication protocols required to send a message to a destination system. Control definitions may comprises protocols both for delivery of the message and any verification or monitoring of the destination system response that is to be done. In step 602, one or more event tracking protocols are established. Event tracking protocols are based on the monitoring and delivery preferences which are included in the message handling protocol. Event tracking protocols may include system monitoring for state information, such as an elapsed time, and may include conditional responses keyed to feedback from the destination system. In steps 603, data is sent to a destination system for establishing a real-time direct data connection. The connection protocol may issue a real-time message with an open response channel, may request a communication channel, or use another method for establishing a real-time communication channel. In step 604, a message send transaction is completed. For example, the output message may be dispatched to a destination system using a conventional electronic message delivery control system. In step 605, the output message is stored for asynchronous delivery or recipient initiated retrieval. The asynchronous system may be coupled with a notification system to provide the recipient with location, timing, and instructions for retrieving the message. The asynchronous system may be used as a method of delaying later delivery attempts in hopes that an unavailable destination address will become available. Steps 603, 604, and 605 may be alternative message delivery methods or may be used concurrently or in some combination. In step 606, successful delivery to the destination address may be verified. This may utilize the return receipt function of standard communication protocols or other verification techniques to confirm delivery. In step 607, the delivery transaction may be recorded or reported to the user or another entity. The record may be accessible to the user for evaluating the success of a particular message delivery, providing a communication record with recipients, and facilitating revision of user-recipient delivery preferences based on previous failed and successful delivery attempts. In step 608, the message handling protocol, transaction record, and delivery verifications may be used to evaluate the need to initiate further deliveries. If no further deliveries are necessary, such as when the

requested deliveries are successful, the message handling protocol is complete. If further deliveries are necessary, the message handling protocol may define what previous steps should be repeated for additional delivery attempts. As shown in Figure 2, the message handling protocol may return to step 241 to determine the next destination address in the hierarchy and proceed from there.

One embodiment of the invention may incorporate the system and method described with regard to Figures 1-6 into a larger integrated business services system and method. Figure 7 depicts such an integrated business system 700. The system is based around a Network 701, to which the various component systems are attached. Network 701 may be a global computer system, such as the Internet. Integrated business system 700 may include a Messaging Gateway System 710, a Service Oversight System 720, a Referral System 730, a Message Handling System 740, a Local Agent System 750, a Communication System 760, a Public System 770, and a User System 780.

Messaging Gateway System 710 may be a message handling system for receiving an input message and processing the message for delivery. The input message may be delivered in a medium other than the medium it was received in and may allow for preferential delivery methods, multiple delivery methods and delivery attempts, and tracking, archiving, and other handling options, substantially as described above with regard to Figures 1-6.

Service Oversight System 720 may provide integrated, consolidated, and customized access to the services provided by the various component systems. For example, Service Oversight System 720 may provide access to combined preference lists, maintain universal user accounts, provide links to content related to one or more of the other services, provide a user interface for one or more of the other services, or provide shortcuts to preferred portions of other services.

Referral System 730 may provide a system and method for connecting service seekers with service providers through a controlled referral system. The Referral System 730 may assist businesses in recruiting employees, employees in finding businesses, and both businesses and individuals in finding services and custom goods.

Message Handling System 740 may provide delivery addresses for electronic, tangible, and other types of correspondence. The Message Handling System 740 may

provide electronic mail accounts, voice mail boxes or physical mailboxes and provide value added services for processing, filtering, tracking, archiving, and redirecting received correspondence.

Local Agent System 750 may be associated with a plurality of decentralized physical locations and provide local marketing, recruiting, data handling, and outlet services for facilitating the services provided by the other systems.

Communication System 760 may be one or more local or global communication systems for delivering messages and data from the other systems.

Public System 770 may be one or more public computer systems, clusters, or networks available to the public for accessing the other systems.

User System 780 may be one or more private computer systems, clusters, or networks usable by businesses and/or individuals for accessing the other systems.

Figure 8 depicts a method of using an integrated business system to send a message through a messaging gateway service. In step 801, a user accesses the service oversight system. The service oversight system may be a web site available over the World Wide Web and the user may use a networked device, such as a personal computer, public kiosk, or telephone to access the service oversight system. The service oversight system may prompt the user to select a service option, such as a referral system service, a gateway messaging service, or a message handling service. In step 802, the user selects the referral system service and utilizes the functionality of the referral system to select a local company which the user would like services from. The company contact information is stored in the users account with the service oversight system. In step 803, the user selects the message handling service to create an electronic mail account and a physical mail box at a local agent location. In step 804, the user selects the gateway messaging service for sending a message to the company selected in step 802. In steps 805-808, the user may choose an access type for sending the message. In step 805, an electronic mail service may be selected. In step 806, a voice service may be selected. In step 807, a video service may be selected. In step 808, a custom service may be selected. User selection may depend on the input options available at the user's terminal device. In step 809, service protocols are defined. The gateway system may prompt input from the user and use information from the service oversight system to create a message handling protocol

including conversions from the message input medium to possible output mediums. In step 810, a message sending transaction is executed. The transaction may involve a plurality of delivery attempts to a plurality delivery addresses in an attempt to complete the transaction. The user may be able to monitor the progress of the delivery attempts and modify future delivery attempts during the transaction. In step 811, the user receives a service result confirmation. The result confirmation may be in the form of a message delivered to the user's electronic mail account or physical address maintained by the message handling service.

This invention has been described in connection with the preferred embodiments. These embodiments are intended to be illustrative only. It will be readily appreciated by those skilled in the art that modifications may be made to these preferred embodiments without departing from the scope of the invention as defined by the appended claims.

Claims

What is claimed is:

1. A communications system for transmitting a message across a network from an input device to an output device comprising:

an input message, said input message having an input medium;

an output message, said output message having an output medium and output protocol; and

a gateway system for receiving said input message and delivering said output message, said gateway system comprising:

a message processing module for determining a destination address, the output medium, and the output protocol;

a conversion module for converting the input medium of said input message to the output medium of said output message and including a plurality of medium specific conversion sub-modules; and,

a delivery module for initiating delivery of the output message according to the output protocol.

2. The system of claim 1, wherein said conversion module includes a text/speech conversion sub-module.

3. The system of claim 1, wherein said conversion module includes a video/graphic conversion sub-module.

4. The system of claim 1, wherein said conversion module includes a language conversion sub-module.

5. The system of claim 1, wherein said conversion module includes a facsimile data conversion sub-module.

6. The system of claim 1, wherein said destination module includes a preferences module, whereby a user specifies delivery preferences.

7. The system of claim 6, wherein the delivery preferences include: address settings, technology settings, language settings, and conversion settings.

8. The system of claim 6, wherein the preferences module includes a database of delivery preferences for a plurality of message recipients.

9. The system of claim 1, wherein said gateway system further comprises an encryption module.

10. The system of claim 1, wherein said delivery module includes an event tracking module for coordinating a plurality of delivery attempts.

11. The system of claim 1, wherein said gateway system further comprises a user interface module.

12. The system of claim 1, wherein said user interface module includes a graphical user interface.

13. A system for transmitting a message across a network from an input device to an output device comprising:

an input message, said input message having an input medium;

an output message, said output message having an output medium and output protocol;

a means for receiving said input message and delivering said output message, said means for receiving and delivering comprising:

a means for determining a destination address, the output medium, and the output protocol;

a means for converting the input medium of said input message to the output medium of said output message and including a plurality of medium specific conversion means;

a means for initiating delivery of the output message in accordance with the output protocol.

14. A method of transmitting a message across a network from an input device to an output device comprising the steps of:

receiving an input message in an input medium from a user;

determining an output protocol;

determining a destination address;

determining an output medium;

creating an output message in the output medium by converting the input message; and

initiating delivery of the output message to the delivery address according to the output protocol.

15. The method of claim 14, wherein the step of creating an output message includes converting between a speech medium and a text medium.

16. The method of claim 14, wherein the step of creating an output message includes converting between a video medium and a graphic medium.

17. The method of claim 14, wherein the step of creating an output message includes converting between language mediums.

18. The method of claim 14, further comprising the step of receiving user delivery preferences and using the user delivery preferences to determine the output protocol.

19. The method of claim 14, further comprising the step of receiving recipient delivery preferences and using the recipient delivery preferences to determine the output protocol.

20. The method of claim 14, further comprising the steps of tracking delivery attempts and initiating additional delivery attempts as a result of failed deliveries.

21. The method of claim 20, wherein the step of initiating additional delivery attempts includes converting the output medium of the output message according to the output protocol.

22. The method of claim 20, wherein the step of initiating additional delivery attempts includes initiating delivery to an alternate delivery address according to the output protocol.

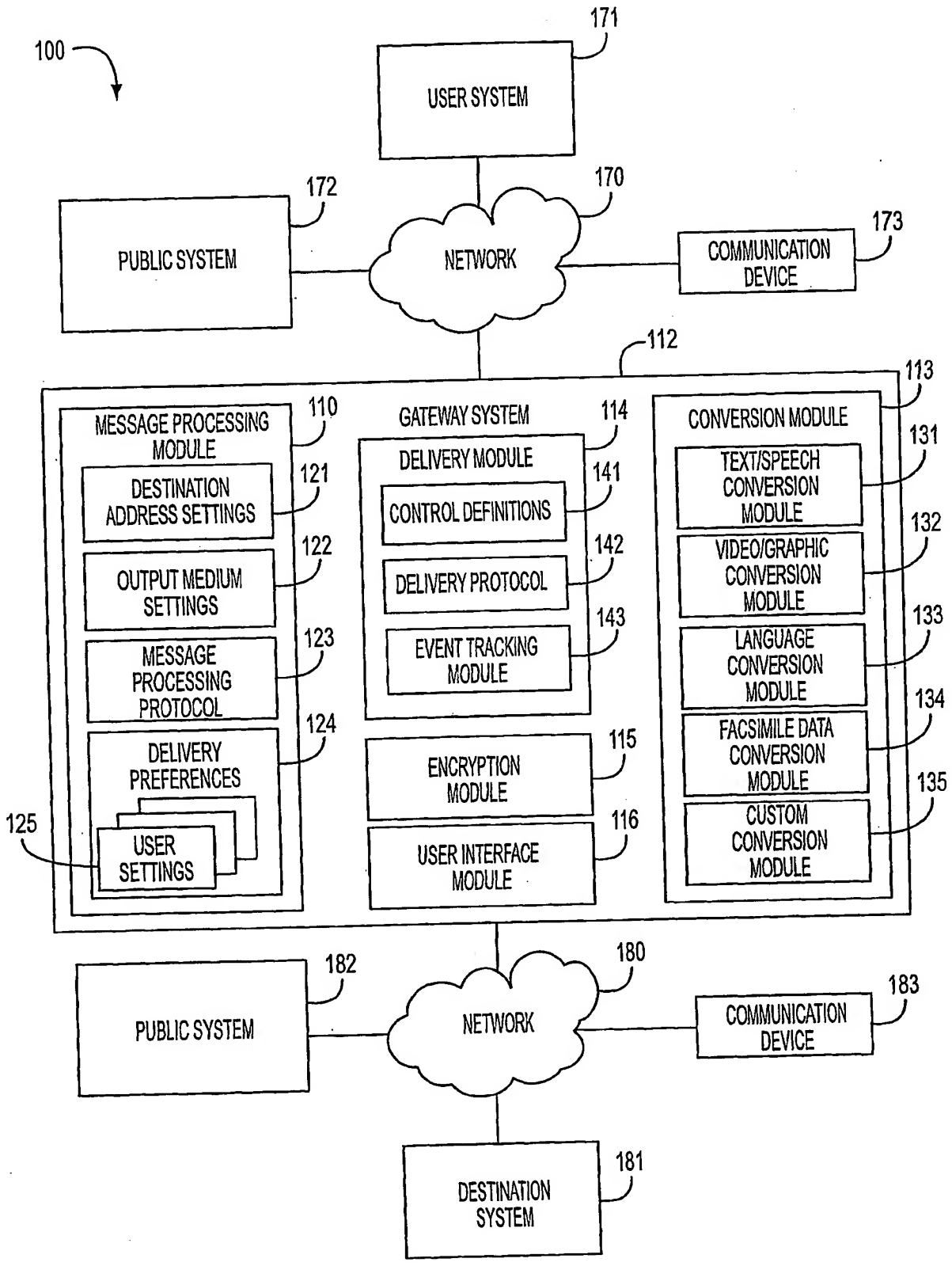
100
171
USER SYSTEM
172
PUBLIC SYSTEM
170
NETWORK
173
COMMUNICATION DEVICE
112
113
MESSAGE PROCESSING MODULE
110
DESTINATION ADDRESS SETTINGS
121
OUTPUT MEDIUM SETTINGS
122
MESSAGE PROCESSING PROTOCOL
123
DELIVERY PREFERENCES
124
USER SETTINGS
125
GATEWAY SYSTEM
114
DELIVERY MODULE
CONTROL DEFINITIONS
141
DELIVERY PROTOCOL
142
EVENT TRACKING MODULE
143
ENCRYPTION MODULE
115
USER INTERFACE MODULE
116
CONVERSION MODULE
TEXT/SPEECH CONVERSION MODULE
131
VIDEO/GRAPHIC CONVERSION MODULE
132
LANGUAGE CONVERSION MODULE
133
FACSIMILE DATA CONVERSION MODULE
134
CUSTOM CONVERSION MODULE
135
182
PUBLIC SYSTEM
180
NETWORK
183
COMMUNICATION DEVICE
181
DESTINATION SYSTEM

FIG. 1

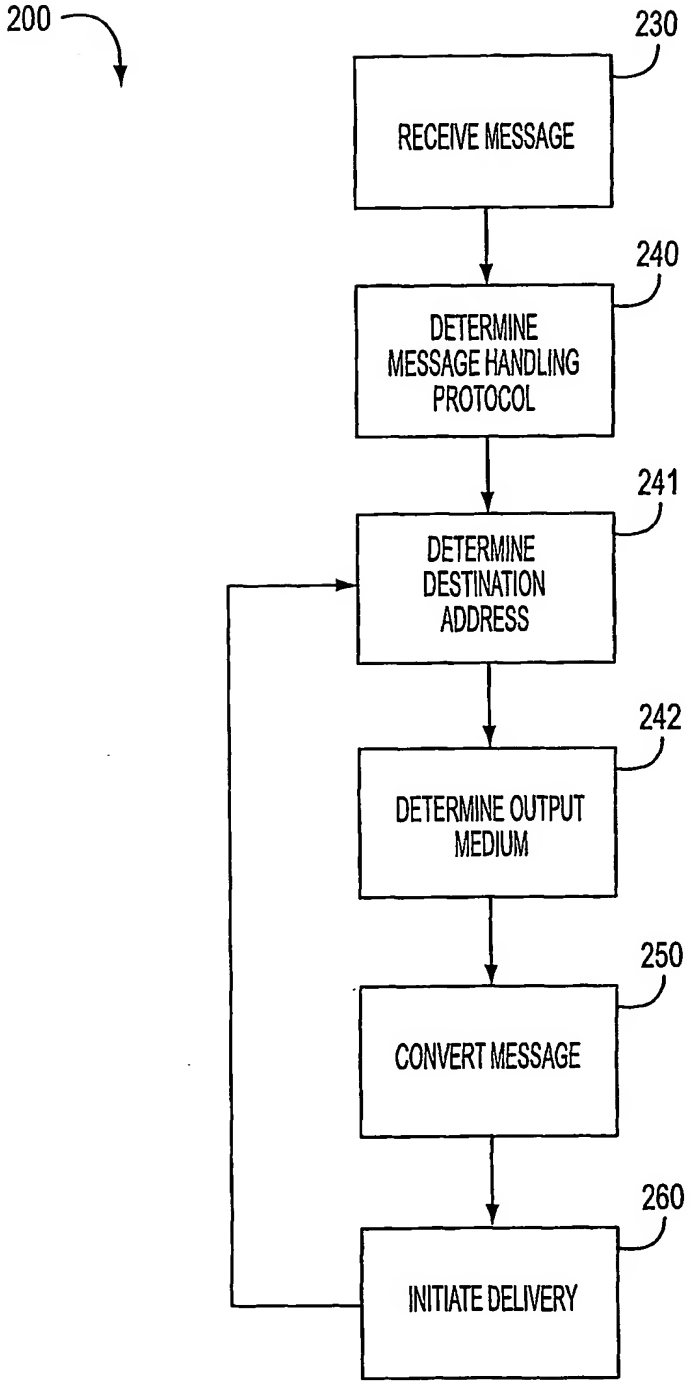
200
230
RECEIVE MESSAGE
240
DETERMINE MESSAGE HANDLING PROTOCOL
241
DETERMINE DESTINATION ADDRESS
242
DETERMINE OUTPUT MEDIUM
250
CONVERT MESSAGE
260
INITIATE DELIVERY

FIG. 2

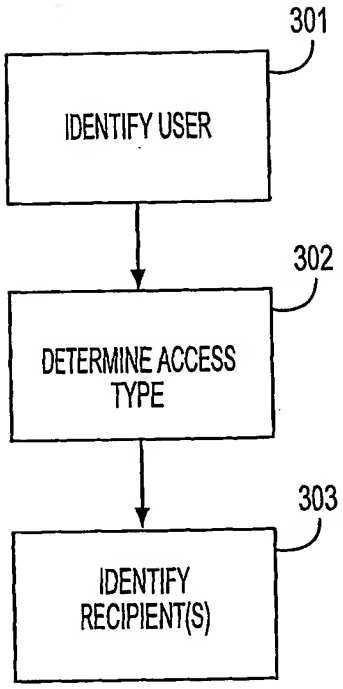
301
IDENTIFY USER
302
DETERMINE ACCESS TYPE
303
IDENTIFY RECIPIENT(S)

FIG. 3

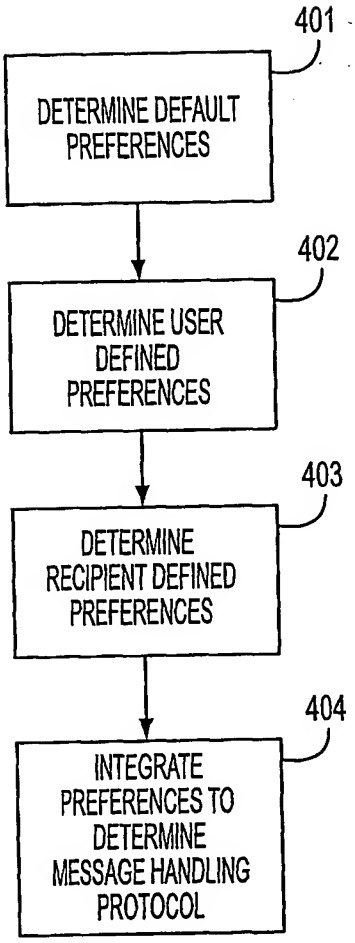
401
DETERMINE DEFAULT PREFERENCES
402
DETERMINE USER DEFINED PREFERENCES
403
DETERMINE RECIPIENT DEFINED PREFERENCES
404
INTEGRATE PREFERENCES TO DETERMINE MESSAGE HANDLING PROTOCOL

FIG. 4

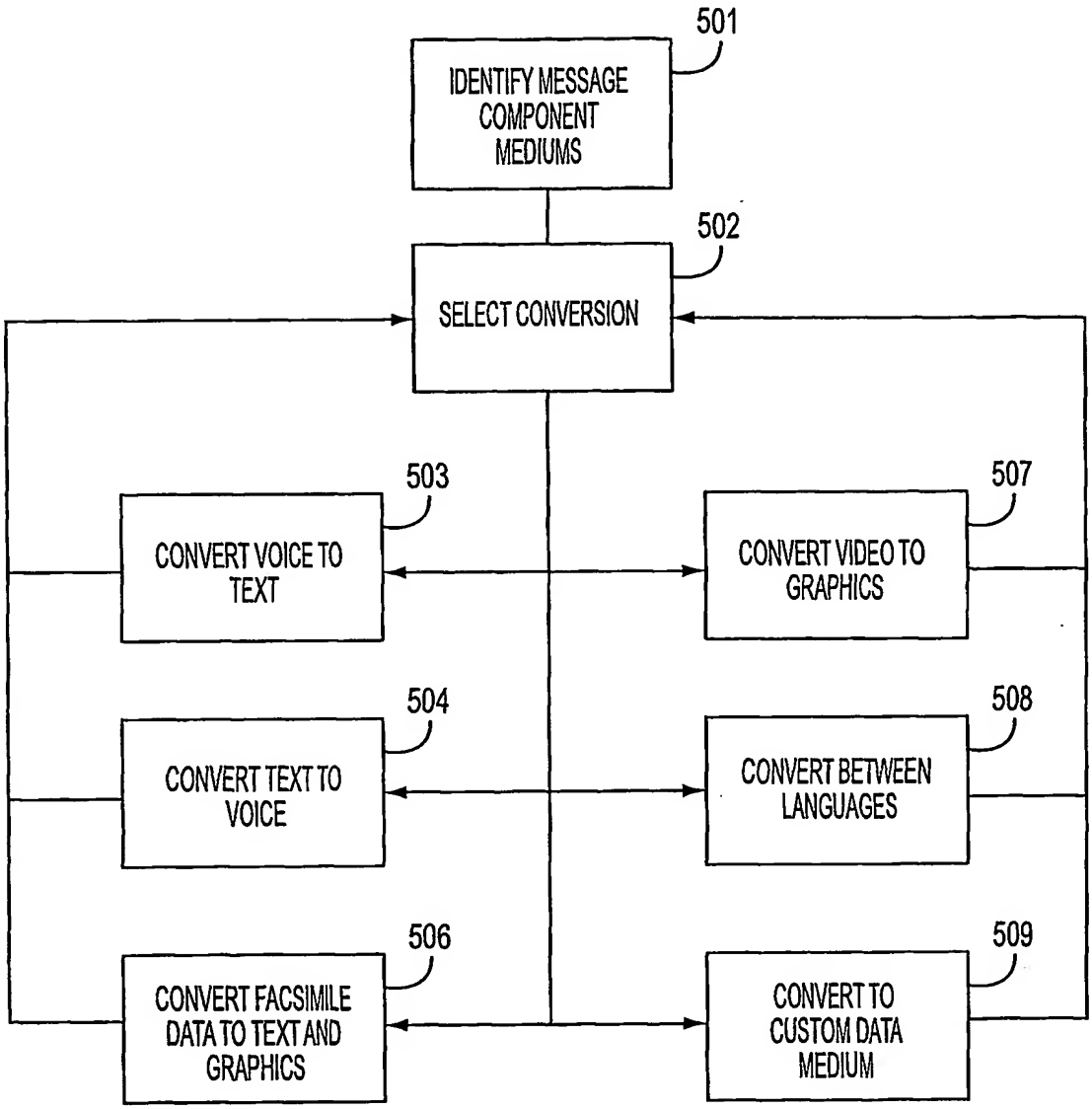
501
IDENTIFY MESSAGE COMPONENT MEDIUMS
502
SELECT CONVERSION
503
CONVERT VOICE TO TEXT
504
CONVERT TEXT TO VOICE
506
CONVERT FACSIMILE DATA TO TEXT AND GRAPHICS
507
CONVERT VIDEO TO GRAPHICS
508
CONVERT BETWEEN LANGUAGES
509
CONVERT TO CUSTOM DATA MEDIUM

FIG. 5

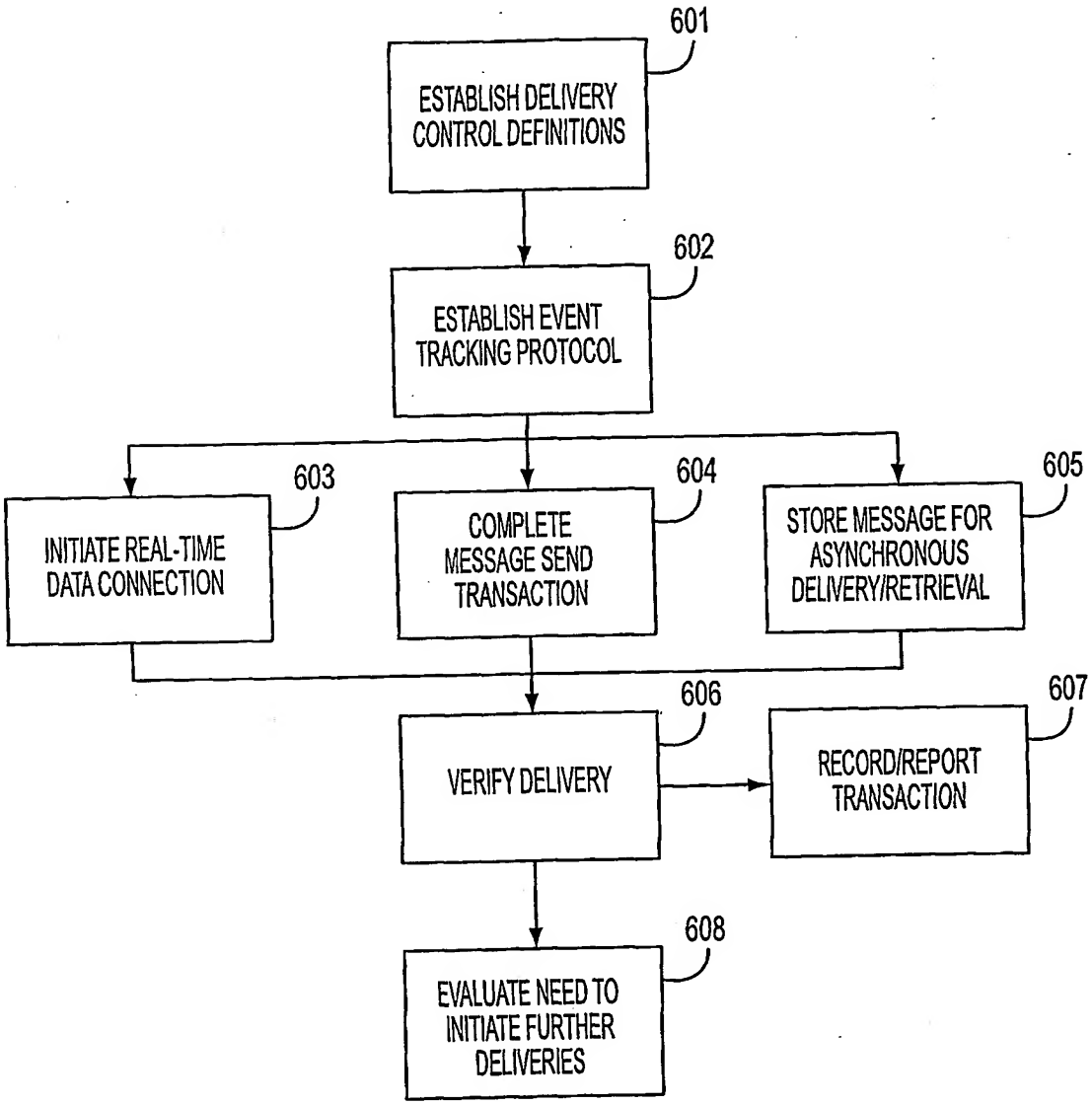
601
ESTABLISH DELIVERY CONTROL DEFINITIONS
602
ESTABLISH EVENT TRACKING PROTOCOL
603
INITIATE REAL-TIME DATA CONNECTION
604
COMPLETE MESSAGE SEND TRANSACTION
605
STORE MESSAGE FOR ASYNCHRONOUS DELIVERY/RETRIEVAL
606
VERIFY DELIVERY
607
RECORD/REPORT TRANSACTION
608
EVALUATE NEED TO INITIATE FURTHER DELIVERIES

FIG. 6

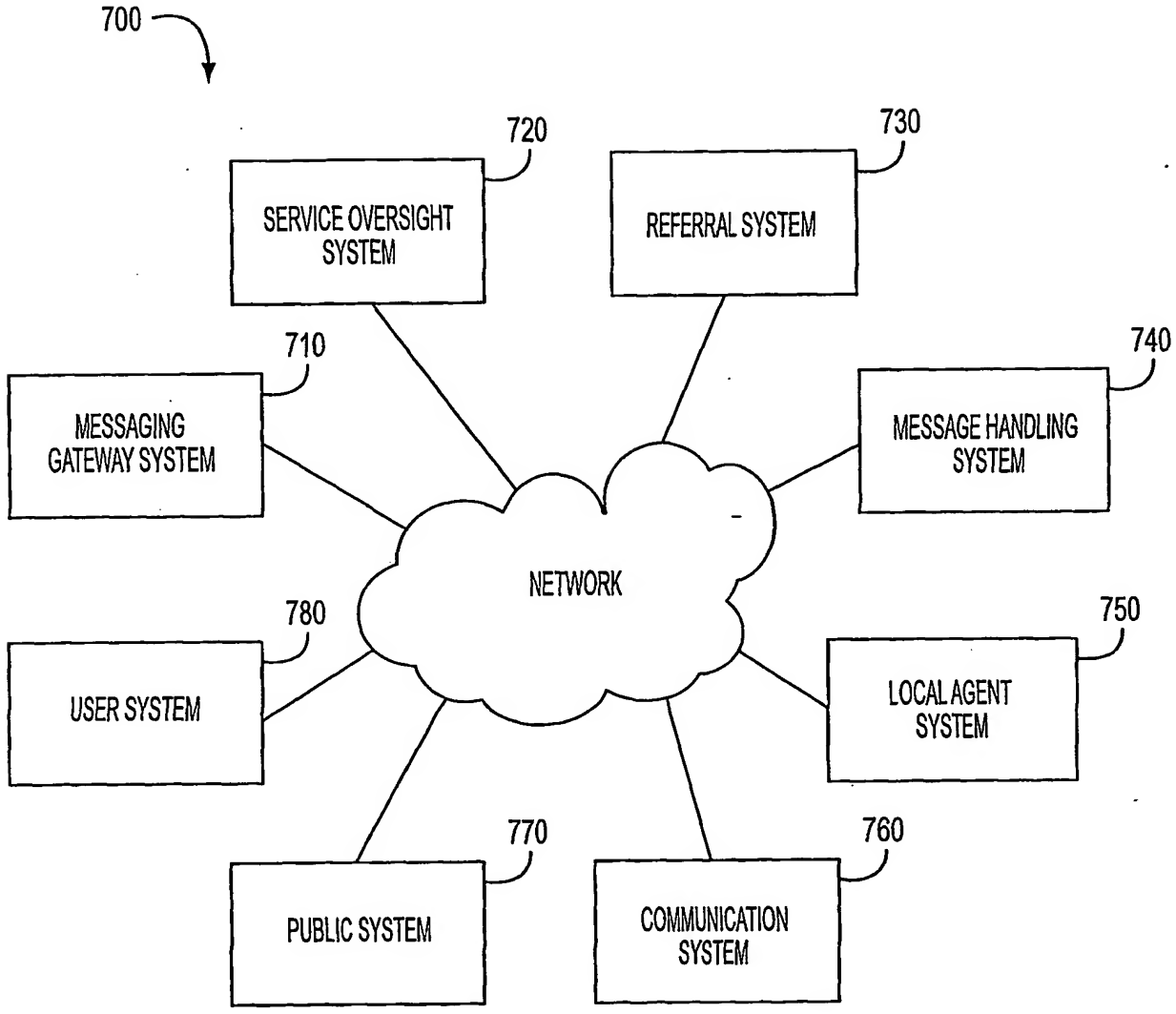
700
720
SERVICE OVERSIGHT SYSTEM
730
REFERRAL SYSTEM
710
MESSAGING GATEWAY SYSTEM
740
MESSAGE HANDLING SYSTEM
NETWORK
780
USER SYSTEM
750
LOCAL AGENT SYSTEM
770
PUBLIC SYSTEM
760
COMMUNICATION SYSTEM

FIG. 7

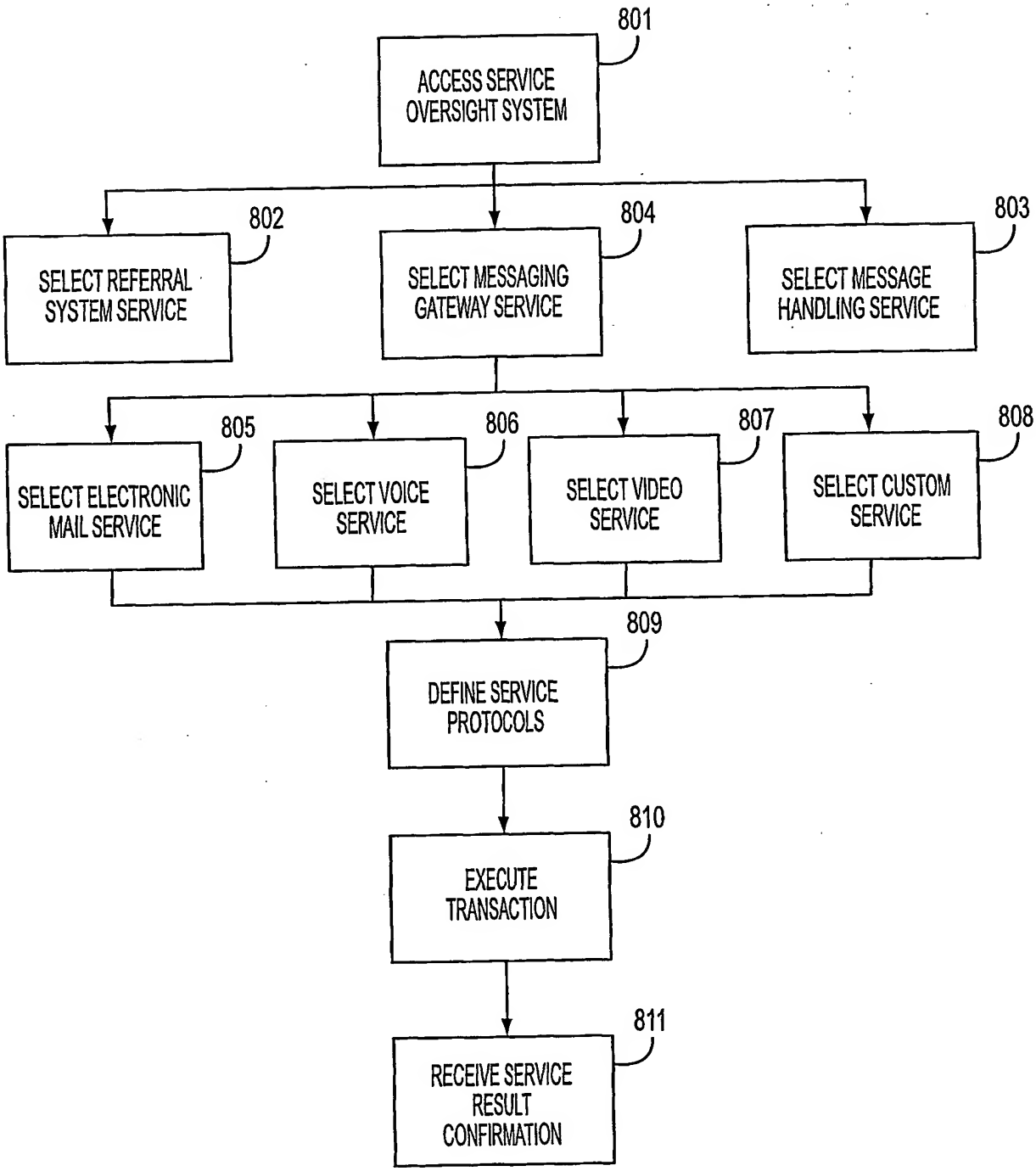
801
ACCESS SERVICE OVERSIGHT SYSTEM
802
SELECT REFERRAL SYSTEM SERVICE
804
SELECT MESSAGING GATEWAY SERVICE
803
SELECT MESSAGE HANDLING SERVICE
805
SELECT ELECTRONIC MAIL SERVICE
806
SELECT VOICE SERVICE
807
SELECT VIDEO SERVICE
808
SELECT CUSTOM SERVICE
809
DEFINE SERVICE PROTOCOLS
810
EXECUTE TRANSACTION
811
RECEIVE SERVICE RESULT CONFIRMATION

FIG. 8

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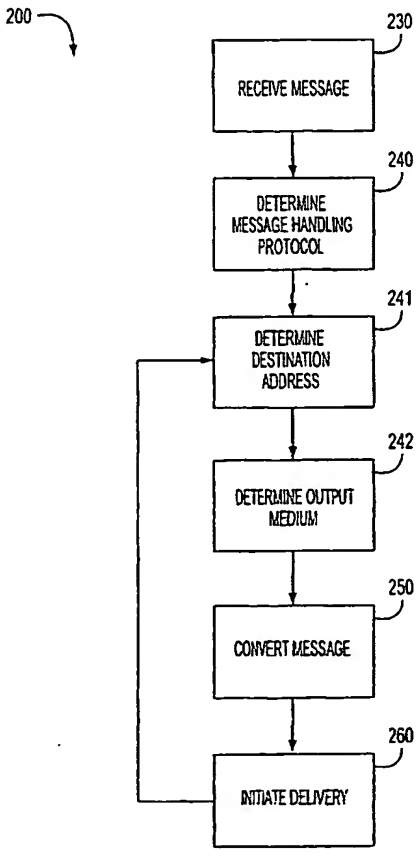
[Continued on next page]

(54) Title: UNIVERSAL COMMUNICATIONS SYSTEM



(57) Abstract: A communications system and method for receiving an input message (step 230) in an input medium and delivering an output message (step 250) in an output medium. The system and method provide a plurality of conversion and delivery options and selection of conversion and delivery options is based upon input from a user.

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-- *with international search report*

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24 January 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/06722

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : H04M 11/00
US CL : 379/88.13
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST, search terms: message, delivery, multimedia

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,859,898 A (CHECCO) 12 January 1999 (12.01.1999), abstract, figures. 3-5 and 8, col. 10, lines 33-37.	1, 3, 9, 12-14, 16, and 19
X--Y	US 5,870,454 A (DAHLEN) 09 February 1999 (09.02.1999), abstract, figures 1, 2A-2B, column 3, lines 35-43, column 4, line 63 - column 5, line 13, column 7, lines 15-20, column 7, line 66 - column 8, line 15, column 10, lines 60-63, column 11, lines 33-37,	1, 2, 4-11, 13-15, and 17-19--------20-22
Y	US 5,646,982 A (HOGAN et al.) 08 July 1997 (08.07.1997), abstract, figures 24 and 25, column 2, lines 46-52, column 3, lines 24-32.	20-22

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Date of the actual completion of the international search 07 April 2001 (07.04.2001)	Date of mailing of the international search report 24 OCT 2001
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Fan S Tsang Telephone No. (703) 305-4700

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/06722

Continuation of B. FIELDS SEARCHED Item 1: 379/88.13, 88.01, 88.07, 88.08, 88.1, 88.17, 88.22, 88.23, 90.01, 03.01, 93.05, 93.07, 93.14, 93.15, 100.01, 100.12, 100.13